

ANNEX 2

PATENT SPECIFICATION

600.377



Application Date: Oct. 4, 1945.

No. 25818/45.

Complete Specification Left: Oct. 3, 1946.

Complete Specification Accepted: April 7, 1948.

Index at acceptance:—Class 94(i), C3c2b; F(2d2: 9: 12a: 19).

PROVISIONAL SPECIFICATION

Improvements in Wrapping Machinery

- We, ALFRED GERMAN ROSE, JOSEPH ARTHUR GILBERT, both British Subjects, of Albion Works, Gainsborough, in the County of Lincoln, and ROSE BROTHERS (GAINSBOROUGH) LIMITED, a British Company, of Albion Works, Gainsborough, in the County of Lincoln, do hereby declare the nature of this invention to be as follows:—
- 10 This invention relates to the wrapping of articles such as cartons, either singly or in groups, batches of cigarettes or other articles, by folding a wrapper of paper, foil, film, or other wrapping material, 15 around the article in the form of a tube with opposed marginal portions of the wrapper lying face to face in the form of an upstanding longitudinal seam which is subsequently sealed and folded down on to the article, then collapsing and sealing 20 end portions of the tube extending from the ends of the article so as to form lateral seams extending along the ends of the article.
- 25 According to the invention, articles are wrapped in the above manner by first folding a wrapper about the bottom and two opposed sides of the article, then forming the longitudinal seam so that it 30 lies parallel to the direction of travel of the article through the folding and sealing elements, then turning the partially wrapped article through an angle of 90° so that the ends of the article lie parallel 35 to the direction of travel of the article and then forming the lateral seams with the article in that position.
- In this manner the final sealing of both the longitudinal and lateral seams may be 40 effected during the travel of the partially wrapped article through the machine. Thus, for example, after the folding of the wrapper about the bottom and two opposed sides of the article as the article 45 is pressed into a carrier member on a conveyor, the opposed marginal portions of the wrapper may be brought together and preliminarily sealed by a pair of presser members arranged for movement in a direction at right angles to the direction 50 of travel of the conveyor, and during further forward movement of the article, the longitudinal seam may be passed through one or more pairs of rollers arranged so as to nip the seam and effect the final seal- 55 ing operation.
- After the formation of the longitudinal seam, the partially wrapped article is turned through 90°, as mentioned above, by pivoting the carrier member on the conveyor (suitable mechanism being provided for this purpose), and the portions of the wrapper extending from the ends of the article are collapsed to form the lateral 60 seams, by pairs of presser members disposed one on each side of the conveyor, and during further movement of the article by the conveyor the lateral seams are passed through nipping rollers similar to the ones mentioned above to complete 65 the sealing of the seams.
- If desired, the presser members in each case may merely fold the wrapper to form the seams, the sealing operation being performed entirely by the rollers mentioned 70 above. Where the presser members are arranged to effect a complete or partial sealing operation, however, the rollers serve the purpose of ensuring that the seal is properly formed.
- Various forms of wrapping material and adhesives may be used. For example, ordinary wrapping paper may be used, in which case the adhesive may be gum or the like, and the presser members and/or 75 the rollers, as the case may be, may be heated for purposes of drying the adhesive.
- The invention is particularly useful when using wrapping material of the kind commonly known as "heat sealing" 80 material, which is coated with a thermoplastic substance which is rendered adhesive by the application of heat and pressure. In such a case, the presser members and/or the rollers, as the case may be, are provided with heating elements to effect the sealing of the seams. 85

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Similar considerations apply when using waxed papers.

It will be understood that many modifications may be made in the apparatus 5 described above with similar results. For example, the rollers may be replaced by endless bands provided with means for pressing adjacent laps of the bands together so as to grip the seam as it passes 10 between the bands. Again, a crimping operation may be formed on the seams if desired.

After the formation of the seams, the wrapped article may be passed through folding elements arranged to fold the 15 lateral seams flat against the end of the article, the finished article being inserted into a carton, tin, or other container, if desired.

Dated this third day of October, 1945.

W. WAITE, A.M.I.Mech.E.,
Acting for Applicants.

COMPLETE SPECIFICATION

Improvements in Wrapping Machinery

20 We, ALFRED GERMAN ROSE, JOSEPH ARTHUR GILBERT, both British Subjects, of Albion Works, Gainsborough, in the County of Lincoln, and ROSE BROTHERS (GAINSBOROUGH) LIMITED, a British Com- 25 pany, of Albion Works, Gainsborough, in the County of Lincoln, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in 30 and by the following statement:—

This invention relates to the wrapping 35 of articles such as cartons, either singly or in groups, batches of cigarettes, or other articles, by folding a wrapper of paper, foil, film, or other wrapping 40 material, around the article in the form of a tube with opposed marginal portions of the wrapper lying face to face in the form of an upstanding longitudinal seam which 45 is subsequently sealed and folded down on to the article, then collapsing and sealing end portions of the tube extending from the ends of the article so as to form lateral 50 seams extending along the ends of the article. The invention is concerned with a new or improved method of and apparatus for performing the above wrapping 55 operations. Packages formed by wrapping articles in the above manner will be referred to hereinafter as packages of the 60 "kind described".

According to the invention, packages of the kind described are formed by folding 65 a wrapper in the form of a "U" about the bottom and two opposed sides of the article with the upstanding portions of the wrapper lying parallel to the direction of travel of the articles through the apparatus, then forming the longitudinal seam 80 by pressing the upstanding portions of the wrapper towards each other, then turning the partially wrapped article through an angle of 90° so that the ends of the article lie parallel to the direction of 85 travel of the article, and then forming the lateral seams with the article in that position.

According to a feature of the invention,

packages of the kind described are formed 70 by an apparatus comprising a conveyor on which is pivotally mounted a series of open-ended article-supporting pockets, means for feeding an article and wrapper 75 to each pocket in turn in such a manner that the wrapper is folded about the bottom and two opposed sides of the article in the form of a "U" with portions of the wrapper left upstanding from the 80 sides of the article and lying parallel to the direction of travel of the article through the machine, means for pressing the upstanding portions of the wrapper 85 towards each other to form a longitudinal seam, means for folding the longitudinal seam down on to the upper face of the package, means for turning each pocket in 90 turn through an angle of 90° so that the ends of the article lie parallel to the direction of travel of the article, and means for collapsing and sealing the tubular portions of the wrapper extending from 95 the ends of the article to form lateral seams.

By the use of the present invention, the 100 final sealing of both the longitudinal and lateral seams may be effected while the partially wrapped articles are travelling through the machines, thus facilitating smooth and efficient operation of the machine.

Various forms of wrapping material and 105 adhesives may be used. For example, ordinary wrapping paper may be used, in which case the adhesive may be gum or the like. The invention is particularly use- 110 ful, however, when using wrapping material of the kind commonly known as "heat-sealing" material, which is coated with a thermoplastic substance which is rendered adhesive by the applica- 115 tion of heat and pressure. In such a case, the seam-forming means are provided with heating elements or electronic sealing means to effect the sealing of the seams.

By way of example, the invention will 120 now be described in greater detail with reference to the accompanying diagram-

pletely sealed package to an ejecting station where the package is lifted clear of the pocket 12 by a pair of lifting members 41 into a stacker 42 during which movement the end seams are folded downwardly against the ends of the package, and during further movement into the stacker 42, the tabs extending from the ends of the package are ploughed over on to the sides of the package by folding members incorporated in the stacker 42. After the delivery of the package into the stacker 42, the empty pocket 12 passes to a further turning station where the roller 21 moves out of the guides 23 while the roller 19 engages a stationary guiding member similar to the guiding member 29, and the pocket is turned back through an angle of 90° to its original position in a manner similar to that described above and the pocket 12 is returned by the chain to the feeding station where another article and wrapper are fed.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Method of forming packages of the kind described, comprising folding a wrapper in the form of a "U" about the bottom and two opposed sides of the article, with the upstanding portions of the wrapper lying parallel to the direction of travel of the articles through the apparatus, then forming the longitudinal seam by pressing the upstanding portions of the wrapper towards each other, then turning the partially wrapped article through an angle of 90° so that the ends of the article lie parallel to the direction of travel of the article, and then forming the lateral seams with the article in that position.

2. Apparatus for forming packages of the kind described, comprising a conveyor on which is pivotally mounted a series of open-ended article-supporting pockets, means for feeding an article and wrapper to each pocket in turn in such a manner that the wrapper is folded about the bottom and two opposed sides of the article in the form of a "U" with portions of the wrapper left upstanding from the sides of the article and lying parallel to the direction of travel of the article through the machine, means for pressing the upstanding portions of the wrapper towards each other to form a longitudinal

seam, means for folding the longitudinal seam down on to the upper face of the package, means for turning each pocket in turn through an angle of 90° so that the ends of the article lie parallel to the direction of travel of the article, and means for collapsing and sealing the tubular portions of the wrapper extending from the ends of the article to form lateral seams.

3. Apparatus according to claim 2, comprising a narrow longitudinal web extending along a portion of the length of the conveyor and arranged adjacent the path of travel of the upper surfaces of the articles, a pair of folding members arranged one on each side of said web and adapted during movement of the conveyor to fold the upstanding portions of each wrapper in turn towards each other so that they lie along the upper surface of the article with marginal portions upstanding against said web, and sealing means arranged adjacent said web and adapted to receive and seal said marginal portions.

4. Apparatus according to claim 3, wherein the sealing means comprises a series of pairs of rollers between which said marginal portions of the wrapper are nipped during their travel through the machine.

5. Apparatus according to any of claims 2 to 4, wherein the collapsed tubular portions of the wrapper at the ends of the articles are sealed by passing them through sets of nip rollers arranged on each side of the machine.

6. Apparatus according to any of claims 2 to 5, wherein the wrappers are formed from heat sealing material and the sealing means comprises heated sealing elements.

7. Apparatus according to any of claims 2 to 6, wherein the pockets are turned by means of a stationary guiding member adapted to be engaged by a projection on each pocket in turn as it reaches the guiding member so that the pocket is caused to turn on its pivot during further forward motion.

8. Method of forming packages substantially as described.

9. Apparatus for forming packages substantially as described with reference to the accompanying drawings.

Dated this second day of October, 1946.
W. WAITE, A.M.I.Mech.E.,
Agent for Applicants.

Leamington Spa: Printed for His Majesty's Stationery Office by the Courier Press.—1948.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2. from which copies, price 1s. 0d. each (Inland) 1s. 1d. (abroad), may be obtained.

600,377 COMPLETE SPECIFICATION

[This Drawing is a reproduction of the Original on a reduced scale.]

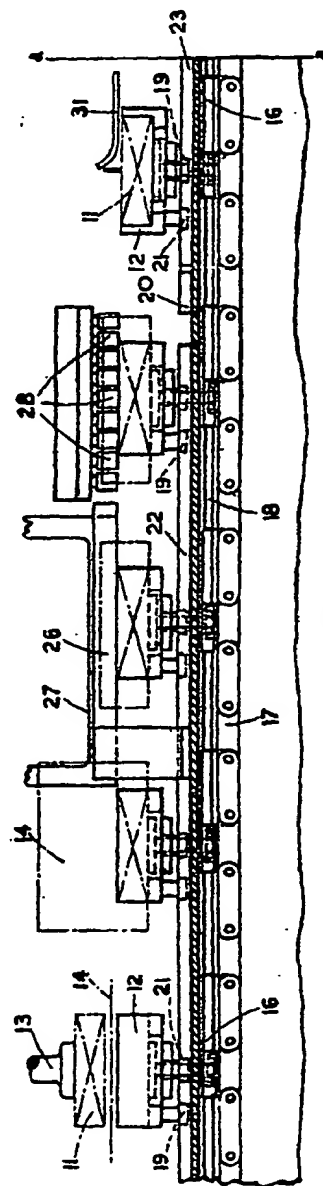
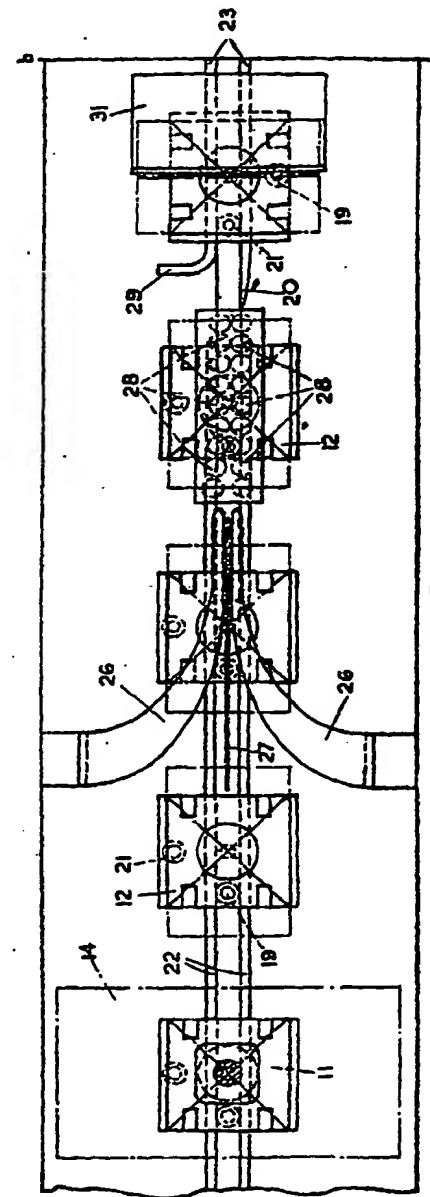


FIG. 1.



2 SHEETS
SHEET 2

SHEET 1

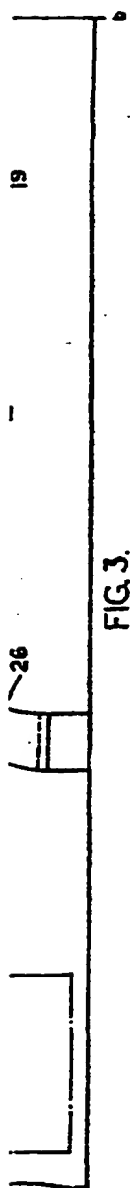


FIG. 3.

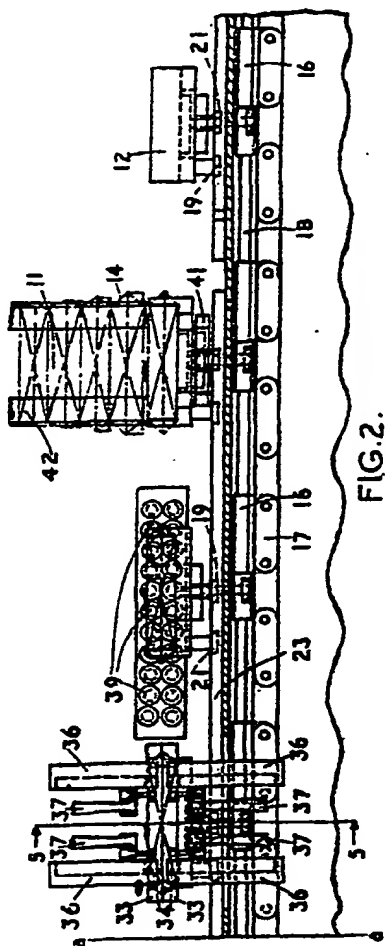


FIG. 2.

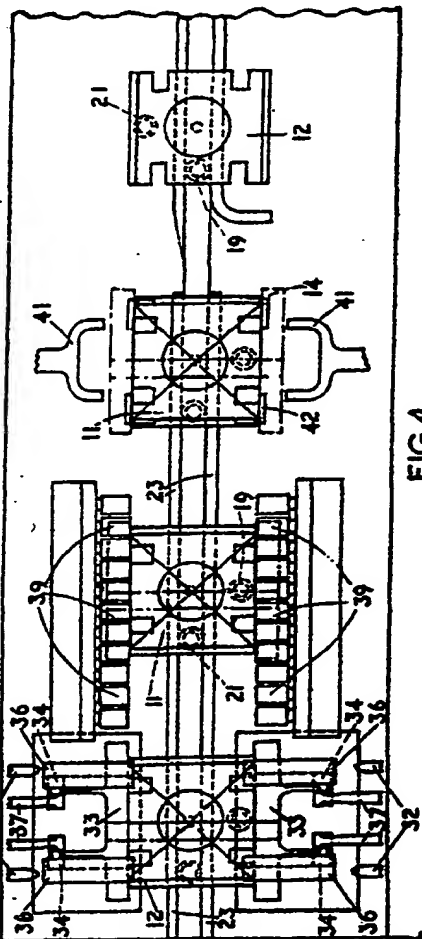


FIG. 4.

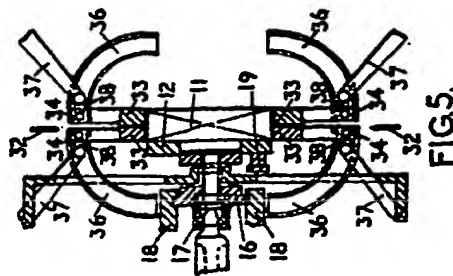


FIG. 5.

H.M.S.O. (Ty. P)